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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/838,678	04/19/2001	Augustus K. Uht	URI.5474	8152

			EXAMINER
20350	7590	10/26/2004	O'BRIEN, BARRY J

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ART UNIT	PAPER NUMBER
2183	

DATE MAILED: 10/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _30 March 2004 and 23 August 2004_.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-8_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-8_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _23 August 2004_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All   b)☐ Some *   c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1-8 have been examined.

Papers Submitted

2.   It is hereby acknowledged that the following papers have been received and placed on record in the file: Change in Power of Attorney as received on 3/30/04, Amendment A as received on 8/23/04, Extension of Time as received on 8/23/04 and Drawings as received on 8/23/04.

Specification

3.   The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

4.   The applicant is requested to review the specification and update the status of all co-pending applications made mention of, replacing attorney docket numbers with current U.S. application or patent numbers when appropriate.

Claim Rejections - 35 USC § 112

5.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6.   Claims 2, 4, 6 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

7.   Claims 2 and 6 recite the limitation "tracking buffer comprising dedicated register

storage" in their second lines. It is unclear whether this limitation is directed towards storing

values of registers in the tracking buffer, or if the tracking buffer itself has registers for storing

data. Please clarify the claim language to more clearly define the metes and bounds of the

claimed invention.

8.   Claims 4 and 8 recite the limitation "branch domains" in their last lines. There is

insufficient antecedent basis for the plural form of the "branch domain" limitation in the claims.

9.   Claims 4 and 8 further recite the limitation "least disjoint" on their third lines. It is

unclear what "least disjoint" means, as branch domains are inherently either "disjoint" (i.e. not

nested or overlapping), or they are not. Furthermore, although the specification describes

"disjoint" branch domains, nowhere are "least disjoint" branch domains described. Please

correct the claim language to more clearly define the metes and bounds of the invention.

Claim Rejections - 35 USC § 102

10.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on
sale in this country, more than one year prior to the date of application for patent in the United States.

11.   Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Klauser et al.,

Dynamic Hammock Predication for Non-predicated Instruction Set Architectures.

12.   Regarding claims 1 and 5, taking claim 1 as exemplary, Klauser has taught a computing

device that provides hardware conversion of control flow to predicates associated with program

instructions executable within said computing device (see Col.2 lines 5-10), said computing

device comprising:

    a.   Predicate assignment means for detecting the beginning and end of a branch

         domain of said program instructions (see Col.3 lines 13-36 and Col.4 lines 12-20),

         said predicate assignment means being invisible to instruction set architecture and

         thereby invisible to a user (see Col.2 lines 3-5),

    b.   Predicate use means for realizing the beginning and the end of said branch

         domain at execution time (see Col.2 lines 5-10), and for selectively enabling and

         disabling within said branch domain (see Col.4 lines 12-28), said predicate use

         means being invisible to instruction set architecture and thereby invisible to a user

         (see Col.2 lines 3-5).

13.   Claim 5 is nearly identical to claim 1, differing in the limitations being comprised within

a method, but encompassing the same scope as claim 1. Therefore, claim 5 is rejected for the

same reasons as claim 1.

14.   Regarding claims 2 and 6, taking claim 2 as exemplary, Klauser has taught the computing

device according to claim 1, wherein said predicate assignment means includes a tracking buffer

(see "rename table" of Fig.3) comprising dedicated register storage in order to make said

predicate assignments (see Col.5 lines 1-26). Here, the rename table contains multiple entries for every register, which are used to make predicate assignments.

15.   Claim 6 is nearly identical to claim 2, differing in its parent claim, but encompassing the same scope as claim 2. Therefore, claim 6 is rejected for the same reasons as claim 2.

16.   Regarding claims 3 and 7, taking claim 3 as exemplary, Klauser has taught the computing device according to claim 1, wherein said predicate assignment means is operative to assign a canceling predicate to said branch domain in order to delineate said branch domain so tat effects of its corresponding branch are nullified (see Col.7 lines 8-28).

17.   Claim 7 is nearly identical to claim 3, differing in its parent claim, but encompassing the same scope as claim 3. Therefore, claim 7 is rejected for the same reasons as claim 3.

18.   Regarding claims 4 and 8, taking claim 4 as exemplary, Klauser has taught the computing device according to claim 3, wherein said predicate use means further includes dedicated registers for each instruction in order to effect arbitrary control flow, including least disjoint, nested, overlapped, and combinations of said branch domains (see Col.9, Section 4.1).

19.   Claim 8 is nearly identical to claim 4, differing in its parent claim, but encompassing the same scope as claim 4. Therefore, claim 8 is rejected for the same reasons as claim 4.

Response to Arguments

20.   Applicant's arguments filed on 8/23/04 have been fully considered but they are not persuasive.

21.   On p.6 of the present amendment, the Applicant argues with respect to independent claims 1 and 5, essentially:

"Klauser asserts that it has 'hardware' conversion, but closer inspection reveals that it requires compiler-based profiling or "transformations" in order to function. It is thus inferable that it modifies the input instructions. In other words, the compiler must modify the original instruction set in order for the Klauser technique to work. ... The present invention is intentionally without compiler support. This distinction is now emphasized in amendment to claim 1 and a newly added corresponding method claim 5 wherein it is now recited that the function is invisible to instruction set architecture and thereby is invisible to a user. .... This is a limitation which clearly removes any reliance on modification or use of compiler-related instructions."

22.   The Applicant is correct in noting that the method of Klauser uses a compiler to mark conditional branches. However, there are no limitations in the claims that specify that a compiler cannot be used to identify control flow instructions (i.e. conditional branch instructions and their corresponding "domains"). Regardless of how Klauser is identifying conditional branch instructions, Klauser's method still performs hardware conversion of control flow to predicates (see Klauser, Col.2 lines 5-14, as well as above paragraph 12).

23.   Furthermore, the method of Klauser is, in fact, "invisible to the instruction set architecture" and "the user". The Applicant is incorrect in noting that Klauser's technique "must modify the original instruction set" (see Applicants remarks, p.6). Instead, Klauser's conversion of control flow to predicates is performed at execution time, hence the title "Dynamic Hammock Predication" (see Klauser, title and Col.2 lines 13-14), and is said to operate on an instruction set without support for predication (see Klauser, Col.2 lines 3-5). Although a compiler is used to "mark" the conditional branch instructions for easy identification, that is in no way a

modification to the existing instruction set architecture, i.e. the instruction set architecture has no

knowledge of the predication (or the marking of conditional branch instructions, for that matter)

and is thus the conversion is "invisible".

Conclusion

24.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

25.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure. Applicant is reminded that in amending in response to a rejection of claims, the

patentable novelty must be clearly shown in view of the state of the art disclosed by the

references cited and the objections made. Applicant must also show how the amendments avoid

such references and objections. See 37 CFR § 1.111(c).

26.   Any inquiry concerning this communication or earlier communications from the

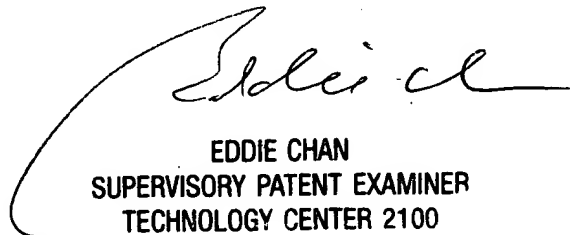examiner should be directed to Barry J. O'Brien whose telephone number is (571) 272-4171.

The examiner can normally be reached on Mon.-Fri. 6:30am-4:00pm, with the exception of the

first Friday of every bi-week.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Eddie Chan can be reached at (571) 272-4162. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

27.   Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private

PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Barry J. O'Brien
Examiner
Art Unit 2183

BJO
10/22/2004

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SUPERVISORY PATENT EXAMINER
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